AN OPERATOR'S HANDBOOK FOR

Safe Drinking Water

For Other Than Municipal and Nontransient Noncommunity Water Systems

Wisconsin Department of Natural Resources

AN OPERATOR'S HANDBOOK FOR

Safe Drinking Water

FOR OTHER THAN MUNICIPAL AND NONTRANSIENT, NONCOMMUNITY WATER SYSTEMS

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Introduction

Safe Drinking water—we take it for granted, but everyone in the state depends on it. Safe water is essential for health, business prosperity, and community growth.

Part of your responsibility, as a public water system owner, is ensuring that your customers get safe water to use and drink.

You face many distinct challenges in managing a public water supply, among them, providing adequate supplies to all users, preventing contamination, and planning for your system's future needs.

Wisconsin's Department of Natural Resources (DNR) oversees construction and operation of public water systems to *make sure* everyone has safe water to drink and use. However, as legal custodian of the water system, **you have primary responsibility to monitor drinking water quality**. This guide was prepared to help you develop, assess, and maintain a quality water supply. This guide emphasizes areas which need your attention to meet legal obligations and to ensure your system provides consumers with safe drinking water, now and in the future.

What are the requirements for safe drinking water and where do they come from?

The Safe Drinking Water Act (SDWA), enacted in 1974, is a federal law that sets health and safety standards for public drinking water in the United States. It was the nation's first comprehensive national drinking water law. Under the law, the U.S. Environmental Protection Agency sets national standards for drinking water, which the States must meet or exceed. If a State fails to meet its responsibilities, the federal government can step in and enforce the standards.

In 1996, Congress passed the first amendments to the SDWA in 10 years. These changes were planned to help the EPA, States, and water systems prepare for future drinking water safety challenges and assure the availability of safe drinking water. They also strengthened public health protection, and allowed for increased public involvement.

What types of systems are regulated under the Safe Drinking Water Act?

Public water systems are governed by the provisions of the SDWA. Both EPA and DNR define a public water system as one that provides water for human consumption through piping to at least 15 service connections or regularly serves an average of at least 25 people daily for at least 60 days per year. There are four types of Public Water Systems in Wisconsin.

The systems covered in this handbook are Other Than Municipals (OTM) and Nontransient Noncommunity (NTNC) systems.

Community

A **municipal water system (MC)** is a water system that serves at least 25 year-round residents, or serves 15 service connections used by year-round residents. The water system is owned by a municipality such as a city, town, village, sanitary district, or owned by a county, state, or federal government.

An **Other-Than-Municipal water system (OTM)** is a water system that serves at least 25 year round residents, or serves 15 service connections used by year round residents (anything greater than 6 months is considered year round). OTMs are owned by an entity that is not a municipality. Examples of these include mobile home parks, subdivisions, apartment buildings, and condominium associations.

Noncommunity

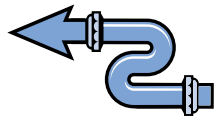
A **nontransient noncommunity water system (NTNC)** is a water system that serves at least 25 of the same people over 6 months of the year. Examples of these systems include schools, day cares, factories, and businesses.

A **transient noncommunity water system (TN)** is a water system that serves at least 25 people at least 60 days of the year but does not serve the same 25 people over 6 months of the year. Examples of these systems include motels, restaurants, parks, taverns, and gas stations.

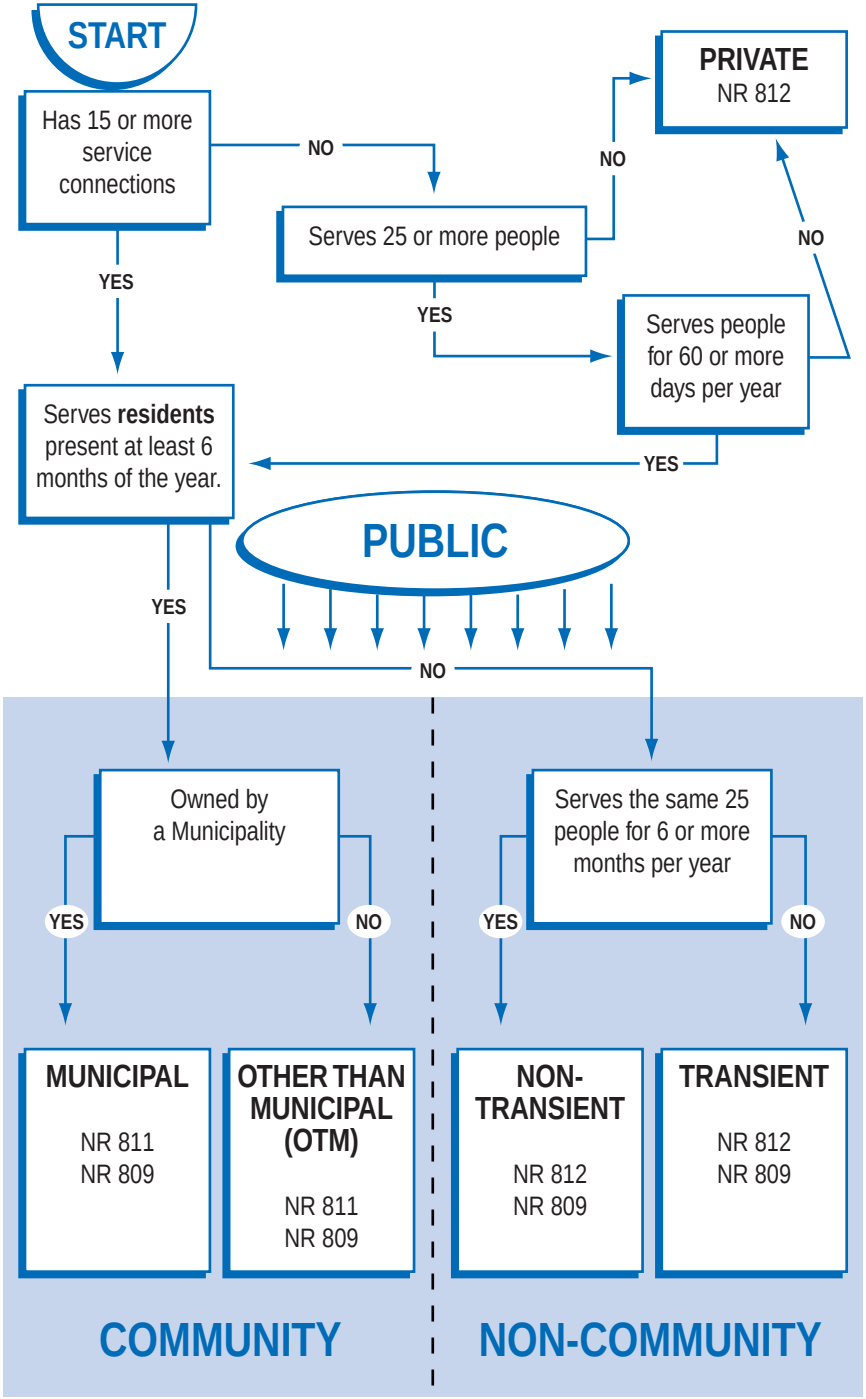
Note: The word “serve” in these cases means that water is available for serving, not that the people are known to drink the water.

For more specific definitions of public water systems, you may read Wisconsin Administrative Code NR 809, Safe Drinking Water Standards. This is available at public libraries, DNR offices, or on the web at **http://www.legis.state.wi.us/rsb/code/nr/nr800toc.html**

How do I know what kind of system I operate?



A chart showing how to determine the type of water system you operate is provided on the next page. If you are not able to determine the type of water system from the chart, refer to the definitions above or contact the nearest DNR office for assistance.



Who do I contact for more information?

The DNR has five regional offices available statewide to serve you. Contact one of them to talk to a drinking water specialist who can assist you with your water system questions. Regional office addresses and phone numbers are listed below, or you can access the DNR Drinking Water staff directory Web page at: **http://www.dnr.state.wi.us/org/water/dwg/regionstaff.htm.**

Northern Region
Department of Natural Resources
810 W. Maple Street
Spooner, WI 54801
(715) 635-2101

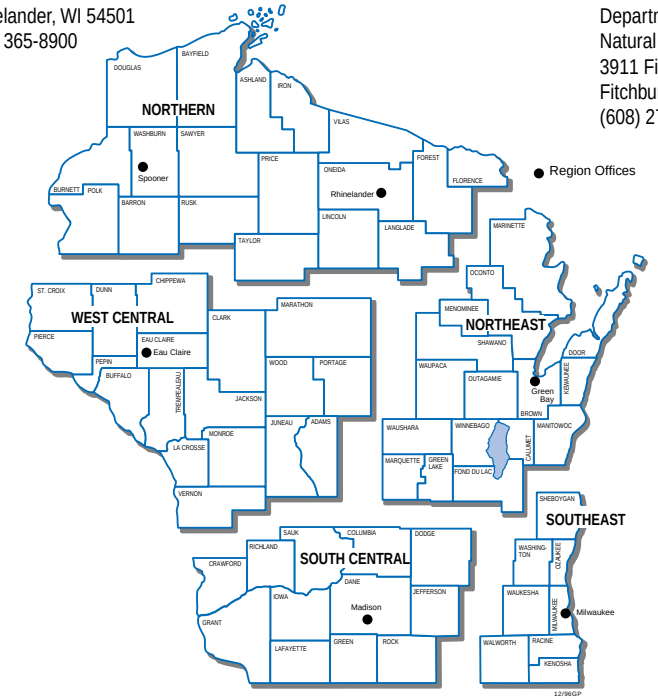
Department of Natural Resources
P.O.Box 818
Rhinelander, WI 54501
(715) 365-8900

West Central Region
Department of Natural Resources
P.O.Box 4001
Eau Claire, WI 54702-4001
(715) 839-3700

Northeast Region
Department of Natural Resources
1125 N. Military Avenue
P.O.Box 10448
Green Bay, WI 54307
(920) 492-5800

Southeast Region
Department of Natural Resources
2300 N. Dr. Martin Luther King Jr. Dr.
P.O.Box 12436
Milwaukee, WI 53212
(414) 263-8500

South Central Region
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711
(608) 275-3266



What is the Wisconsin Department of Natural Resource's responsibility?

The Department of Natural Resources is responsible for implementing the Safe Drinking Water Act in Wisconsin. DNR oversees water supply systems to protect the health and welfare of users, and to protect our state's water resources. Enforcement of drinking water laws is carried out through the Drinking Water Program. This program is managed by staff in the Bureau of Drinking Water and Groundwater.

The Federal Safe Drinking Water Act (SDWA), State Statutes and State Natural Resources (NR) Administrative Rules supply the legal foundation for water system regulation. The responsibilities include approvals of new systems and improvements to existing systems, technical assistance, facility inspections, and enforcement of drinking water standards and monitoring.

Approvals: DNR staff approves plans for well construction, pump installation, well rehabilitation, chemical addition to water, water treatment and new system capacity.

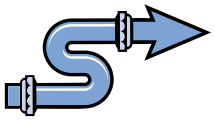
Technical Assistance: DNR staff provides assistance to public well operators on compliance issues for the SDWA. Staff also works with wellhead protection programs across the state.

Inspections: DNR staff conducts inspections of public wells and assesses vulnerability of water systems to contamination.

Enforcement: DNR staff enforces SDWA regulations with systems not in compliance. This includes notices of violation and legal action if required.

The Department is eager to establish a good working relationship with you to help you prevent compliance problems before they occur.

What are my responsibilities?



It is your responsibility to provide drinking water that meets state and federal drinking water standards, listed on a Maximum Contaminant Level (MCL) table in the reference section at the end of this handbook. The basic requirements are to:

1. Assure the water you are providing meets state and federal drinking water standards. These standards are found in Wisconsin Administrative Code NR809, Safe Drinking Water Act Standards. This is done by sampling water regularly and checking for various contaminants that may be found in drinking water. The amount of sampling and number of different chemicals is dependent on what type of public water system you own or operate.

2. Ensure the water system is constructed according to state standards.

   For noncommunity systems, the Wisconsin Administrative Code is NR812, Well Construction and Pump Installation.

   For community systems, the Wisconsin Administrative code is NR811, Requirements for the Operation and Design for Community Water Systems.

   To meet construction standards, you are responsible for obtaining approvals prior to making modifications to your water system.

   For community water systems, an approval would be required for any modifications that could impact the quantity or quality of the water provided. This includes changing well pump capacity, installing a water treatment system, installing additional water storage tanks, deepening your well, or chemically treating your well.

   For nontransient noncommunity water systems, an approval would be required for a school, to install a water treatment system to treat a health related contaminant, or, if the pumping capacity of the wells on the property were to be increased to 70 gallons per minute or more.

3. Maintain your water system in good condition to provide a safe, dependable water supply.

What sampling is required?

EPA has established pollutant-specific minimum testing schedules for public water systems. **To find your system's specific requirements, contact your regional DNR representative.** (See page 9.)

The following table shows the major groups of contaminants and the minimum frequency that public water systems must test for them. If a problem is detected, there are immediate retesting requirements that go into effect and strict instructions for how the system informs the public about the problem. Until the system can reliably demonstrate that it is free of problems, the retesting is continued.

General Sample Monitoring Schedule for OTM and Nontransient Non Community systems

Contaminant	Minimum Monitoring Frequency
Acute Contaminants	**Immediate risk to human health**
Bacteria	Monthly or quarterly, depending on system size and type
Nitrate	Annually
Protozoa and Viruses	Future requirements for the Groundwater Rule may require monitoring and testing.
Chronic Contaminants	**Long-term health effects if consumed at certain levels for extended periods of time**
Volatile Organics (e.g., benzene)	Ground water systems: quarterly for the first year, annually for years 2 and 3, after that depending on results; surface water systems: annually
Synthetic Organics (e.g., pesticides)	Larger systems, twice in 3 years; smaller systems, once in 3 years
Inorganics/Metals	Ground water systems, once every 3 years; surface water systems, annually
Lead and Copper	Annually
Radionuclides	Once every 4 years

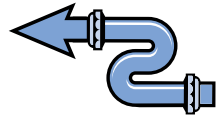
* General requirements may differ slightly based on the size or type of drinking water system.

Source: EPA OGWDW web site

The contaminants that must be monitored depend on the system type, population served, and the type of source water. The sampling frequency depends on the characteristics of each contaminant and the risk to human health. Wisconsin Administrative Code NR 809, Safe Drinking Water Act Standards, specifies how often you need to test for each substance. The DNR will contact you when the initial sampling must begin.

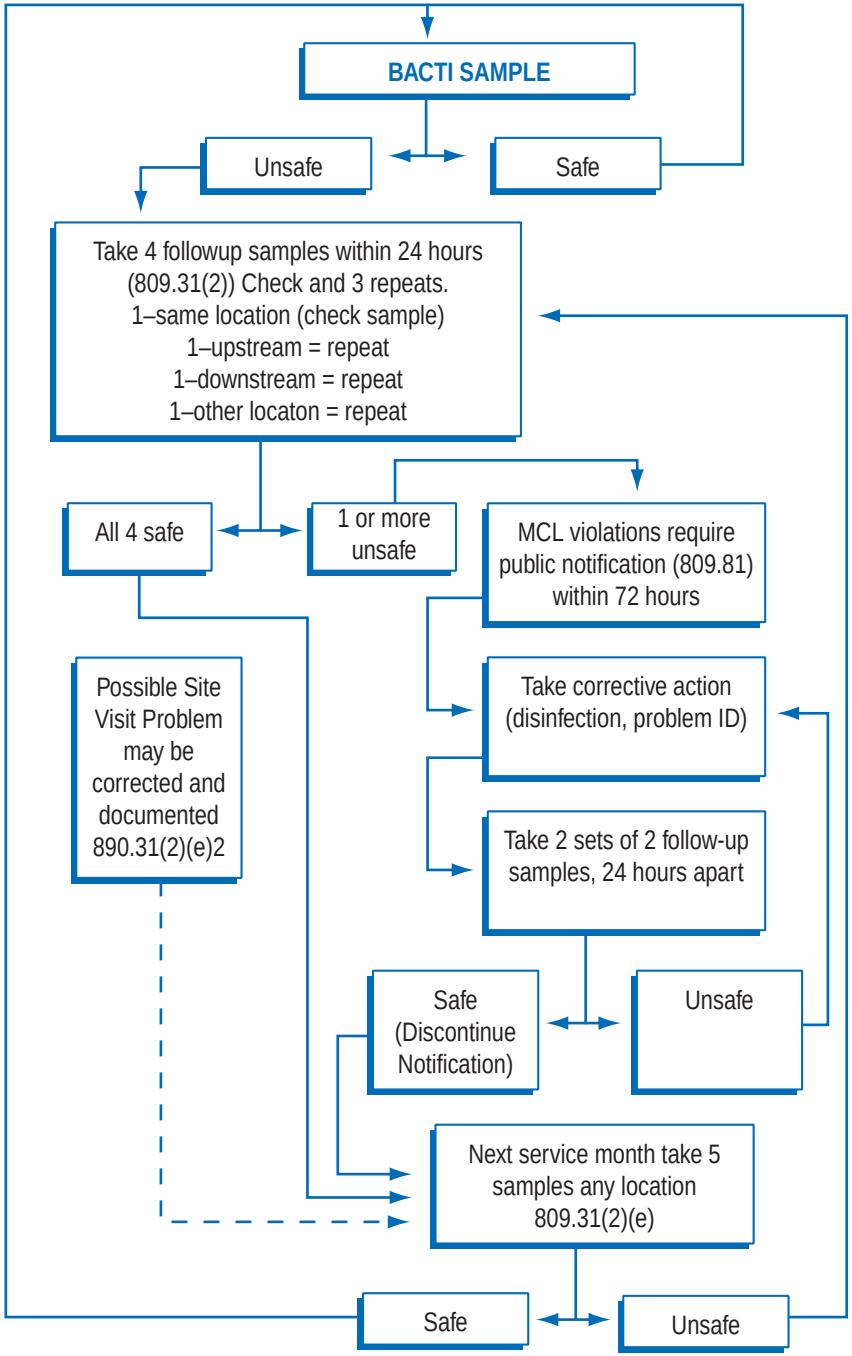
Water samples must be analyzed at a laboratory certified for Safe Drinking Water analysis. A list is available from the DNR, or on the web at http://www.dnr.state.wi.us/org/es/science/lc/search/.

What happens if I don't monitor correctly?



Failure to monitor at the designated frequency or to submit the results to the DNR, violates the monitoring and reporting provisions of the SDWA and Wisconsin Administrative Code NR 809, Safe Drinking Water Act Standards. DNR staff will first work with you to bring your system into compliance. If this is unsuccessful, appropriate legal action will be taken.

Page 16 provides a flow chart of actions you must take if your bacterial sample analysis comes back with levels above the standards.



Reference

Standards: There are two types of standards: primary and secondary. Primary refers to contaminants that are directly related to health. Secondary refers to contaminants that are related to aesthetics (taste, odor, color).

Primary

- Coliform bacteria
- Inorganic chemicals (IOC)
- Synthetic Organic chemicals (SOC)
  - ✔ Includes pesticides
- Volatile Organic Chemicals (VOC)
- Radioactivity
- Lead & Copper

Secondary

- Aluminum,
- Chloride,
- Copper,
- Fluoride,
- Foaming Agents,
- Iron,
- Manganese,
- Silver,
- Sulfate,
- Total Dissolved Solids
- Zinc

Am I affected by the 1996 amendments to the SDWA?

	Capital Development	Operator's Certificate	CCRs	Groundwater Rule	Disinfection/ Disinfectant Byproduct Rule
OTM	Yes	Yes	Yes	Yes	Yes
NTNC	Yes	Yes	No	Yes	Yes

A water system **capacity development program** is required for both new and existing systems. The goal is to ensure that drinking water systems have the managerial, technical and financial ability to properly protect and operate water supplies.

Managerial ability refers to the management structure of a system, including ownership accountability, staffing and organization.

Technical ability refers to the physical infrastructure of the water system and ability of system personnel to adequately operate and maintain the system.

Financial ability looks at the financial resources of the water system, including revenue sufficiency, credit worthiness and fiscal controls.

Starting October 1, 1999, all new Other-Than-Municipal and Nontransient Noncommunity Water systems will be required to demonstrate adequate capacity in the plan approval process. In addition, by August, 2000 the DNR will have a new strategy for evaluating existing systems.

The 1996 amendments require states to **certify operators** of Other-Than-Municipal systems and nontransient, noncommunity systems.

More information on these programs will be provided as it becomes available.

Maximum Contaminant Levels (MCLs)

The DNR has adopted numerical drinking water standards called maximum contaminant levels (MCLs) that your water supply must meet. The MCL is the maximum allowable level of a substance that you can deliver to the customer in your water. The following table has the most recent levels available as of printing in 1999. MCLs can change with regulation changes. If you have a question, contact your regional DNR representative. (See page 9.)

Maximum Contaminant Levels for Drinking Water Contaminants—Inorganic Contaminants

Inorganic Compound	MCL (mg/L)
Regulated Inorganic Compounds	
Asbestos	7XlO' fibers/L
Arsenic	*0.05*
Barium	2
Cadmium	*0.005*
Antimony	0.006
Beryllium	0.004
Chromium	0.1
Fluoride	4.0
Mercury	0.002
Nickel	0.1
Nitrate	10
Nitrite	1
Total Nitrate & Nitrite	10
Selenium	*0.05*
Cyanide	0.2
Thallium	0.002
Unregulated Inorganic Compounds	
Sulfate	

Volatile Organic Contaminants

Regulated VOCs	MCL (ug/L)
Benzene[1]	5
Vinyl Chloride[1]	0.2
Carbon Tetrachloride[1]	5
1,2-Dichloroethane[1]	5
Trichloroethylene[1]	5
1,1-Dichloroethlyene	7
1,1,1-Trichloroethane	200
p-Dichlorobenzene	75
o-Dichlorobenzene	600
1,2-Dichloroethylene,cis	70
1,2-Dichloroethylene,trans	100
1,2-Dichloropropane[1]	100
Ethylbenzene	700
Monochlorobenzene	100
Styrene	100
Tetrachloroethylene[1]	5
Toluene	1,000
Xylenes (Total)	10,000
Dichloromethane	5
1,2,4 Trichlorobenzene	70
1,1,2 Trichloroethane	5

Unregulated VOCs
1,1-Dichloroethane
1,1-Dichloropropene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
1,2,3-Trichloropropane
1,3-Dichloropropane
1,3-Dichloropropene
2,2-Dichloropropane
Bromobenzene
Bromodichloromethane
Bromoform
Bromomethane
Chlorodibromomethane
Chloromethane
Chloroform
Chloromethane
Dibromomethane
m-Dichlorobenzene
o-Chlorotoluene
p-Chlorotoluene

Synthetic Organic Contaminants

Regulated SOCs	MCL (ug/L)
Alachlor	2
Atrazine	3
Carbofuran	40
Chlordane'	2
Dalapon	200
Dibromochloropropane	0.2
Dinoseb	7
Endrin	2
Ethylene Dibromide'	0.05
Heptachlor	0.4
Heptachlor Epoxide'	0.2
Hexachlorobenzene	1
Lindane	0.2
Methoxychlor	40
PCBs'	0.5
Pentachlorophenot	1
Picloram	500
Simazine	4
Toxaphene'	3
2,4-D	70
2,4,5-TP	50
Oxamyl	200
Diquat	20
Endothall'	100
Glyphosate	700
Benzo(a)pyrene'	0.2
Di(2-ethylhexyl)adipate	400
Di(2-ethylhexyl)phtalate	6
Hexachlorocyclopentadiene	50
Dioxin' (2,3,7,8TCDD)	0.00003

Unregulated SOC
Aldrin
Aldicarb
Aldicarb Sulfoxide
Aldicarb Sulfone
Butachlor
Carbatyl
Dicamba
Dieldrin
3-Hydroxycarbofuran
Methomyl
Metolachlor
Metribuzin
Propachlor

[1] These compounds have a MCLG < MCL

[2] Systems with < 500 people will monitor these contaminants in the 1996-1998 compliance period unless waived.

How will I know when my water has exceeded a MCL?

All of the analyses required by the state drinking water regulations must be performed by a state certified laboratory. Certified laboratories will know if any of your analysis results exceeded a MCL, and they will notify you of the results. In addition, results of all analyses must be submitted to the DNR within 10 days of receipt from the laboratory. The DNR reviews your results and informs you of any violations.

What do I do if my water exceeds a MCL?

If your water system doesn't meet the standards, you must issue a public notice and take immediate action to return the drinking water to a safe condition in compliance with the standards. The degree of follow-up action depends on the type and amount of contamination. The Department of Natural Resources will work closely with you in determining the degree of follow-up that will be necessary for your particular water system.

Public Notification

When a MCL is exceeded, you must notify the public of the condition. The notification must contain at a minimum, the contaminant found and its level, health effects of exposure, measures being taken to alleviate the problem, and the name and telephone number of someone who can provide the consumer with more information. This notice must be posted at all drinking water outlets, or if it is an Other-Than-Municipal system the notification must be hand delivered or mailed to each residence. The type of notification required will depend on the severity of the contamination, the type of population being served, and the urgency of the situation. The DNR will assist you in preparing the notification if requested.

Contact your regional DNR representative for public notification instructions. Whenever you carry out public notification, make sure that a copy of notification is forwarded to your regional DNR representative. The regional office handling your water system must be able to verify that notification was conducted in order for your system to be considered in compliance with this requirement.

Sample Public Notice for MCL Violation (Non-Acute)

Public Notice:

Dear User/Customer etc.,

The U.S. Environmental Protection Agency requires that we [send you/publish] *this notice to inform you of a violation of the maximum contaminant level (MCL) for* [compound] *in the* [water system name]. *The State and Federal MCL for* [compound] *is set at* [level] *to reduce risks associated with* [cancer or other health effect]. *Analyses results indicate that the* [water system name] *drinking water cointains* [concentration level in the system].

Health Effects: [This paragraph should contain a description of the health effect and risk associated with the contaminant that exceeds the MCL. For Bacteria and VOCs, must use the wording specificied in Wisconsin Administrative Code NR 809.81 (5), Safe Drinking Water Act Standards. For other contaminants, system owner will have to get specific information regarding health effects and risks from DNR or Department of Health and Family Services (DHSS).]

Necessity for Alternate Water Supplies/Preventative Measures by Consumers: [This paragraph will depend on the level of contamination and increase in risk. In the majority of cases, alternate water supplies would not be recommended. Consumers may be advised to take some preventative measure if they are simple (such as boiling drinking water to neutralize bacteria].

Population at Risk: [This paragraph will depend on the contaminant and concentration, also. For most cases, the entire populatin served will be at risk, however, for some substances such as lead, a certain segment of the population (children) may be at a greater risk of injury.]

If you wish to receive additional information regarding this notice, you may contact [name and telephone number].

Sincerely,
[Water system spokesperson]

Web sites referenced in handbook

Department of Natural Resources Web site

http://www.dnr.state.wi.us

Department of Natural Resources
Bureau of Drinking Water and Groundwater Web site

http://www.dnr.state.wi.us/org/water/dwg/

When public notification is required, there is approved health affects language created by the Environmental Protection Agency. This language is available in print in Wisconsin Administrative Code NR809, Safe Drinking Water Act Standards. You can also get health effects language for regulated contaminants at the EPA website:

http://www.epa.gov/OGWDW/hfacts.html

For more specific definitions of public water systems, read Wisconsin Administrative Code NR 809, Safe Drinking Water Standards. This is available at public libraries, DNR offices, or on the web at:

http://www.legis.state.wi.us/rsb/code/nr/nr800toc.html

There is a listing of regional offices on page 9 in this handbook. For names of DNR personnel, contact or visit the nearest regional office, or access the DNR Web site, at:

http://www.dnr.state.wi.us/org/water/dwg/regionstaff.htm

Water samples must be analyzed at a laboratory certified for Safe Drinking Water analysis. A list is available from the DNR, or on the Web at:

http://www.dnr.state.wi.us/org/es/science/lc/search/

Notes

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Equal Opportunity Office, U.S. Department of the Interior, Washington, D.C. 20240

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